

Appl.No. 09/990,965  
Amdt. Dated September 28, 2005  
Reply to Office Action of June 28, 2005

### Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

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#### **Listing of Claims:**

- 1 1. (Previously Presented) A transmitter for use in optical communication  
2 system, said transmitter comprising  
3 a means for generating a stream of RZ optical pulses in which  
4 alternate ones of such pulses have essentially orthogonal  
5 polarizations, and  
6 a means for modulating the phases of said optical pulses as a  
7 function of input data applied to said transmitter to encode said  
8 input data onto said stream of RZ optical pulses.  
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- 1 2. (Original) The invention defined in claim 1 wherein said modulating  
2 means is a phase shift keyed (PSK) modulator.  
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- 1 3. (Original) The invention defined in claim 1 wherein said modulating  
2 means is arranged to modulate said optical pulses in accordance with  
3 the differences between successive bits in the said input data.  
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- 1 4. (Previously Presented) A transmitter for use in optical communication  
2 system, said transmitter comprising  
3 a means for generating a first and a second stream of RZ optical  
4 pulses in which pulses is in said first stream have essentially

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5 orthogonal polarizations with respect to pulses in said second  
6 stream, and  
7 means for modulating the phase of said optical pulses in said first  
8 and second streams as a function of first and second streams of  
9 input data applied to said transmitter, respectively to encode said  
10 first and second streams of RZ optical pulses, respectively.

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1 5. (Original) The invention defined in claim 4, wherein the said first and  
2 second stream of optical pulses each have same first wavelength, and  
3 wherein said transmitter further includes a wavelength division  
4 multiplexer for combining the output of the said modulation means with  
5 at least a second modulated optical signal having a wavelength  
6 different from said first wavelength.

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1 6. (Original) The invention defined in claim 4, wherein said optical pulses  
2 are solitons.

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1 7. (Previously Presented) An optical communication system arranged to  
2 transmit at least one stream of input data from a transmitter to a remote  
3 receiver, said system comprising  
4 a transmitter for generating a stream of RZ optical pulses in which  
5 alternate ones of such pulses have essentially orthogonal  
6 polarizations, and for modulating the phase of said optical pulses  
7 as a function of said input data applied to said transmitter to  
8 encode said input data onto said stream of optical pulses, and  
9 an optical communication channel for transmitting the phase  
10 modulated optical pulses from said transmitter to said remote  
11 receiver.

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- 1        8. (Original) The invention defined in claim 7 wherein said system further  
2        includes a demodulator for recovering said at least one stream of input  
3        data from said modulated optical pulses at said remote receiver.  
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- 1        9. (Previously Presented) A method for transmitting input data using an  
2        optical communication system, said method comprising the steps of  
3        generating a stream of RZ optical pulses in which alternate ones of  
4        such pulses have essentially orthogonal polarizations, and  
5        modulating the phases of said optical pulses as a function of said  
6        input data to encode said input data onto said stream of RZ  
7        optical pulses.  
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- 1        10. (Original) The invention defined in claim 9 wherein said modulating  
2        step includes phase shift keying of said optical pulses in a PSK  
3        modulator.  
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- 1        11. (Original) The invention defined in claim 9 wherein said modulating  
2        step includes modulating said optical pulses in accordance with the  
3        differences between successive bits in the said input data.  
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- 1        12. (Currently Amended) A method for transmitting input data using an  
2        optical communication system, said method comprising the steps of  
3        generating first and second streams of RZ optical pulses in which  
4        pulses is in said first stream have essentially orthogonal  
5        polarizations with respect to pulses in said second stream, and  
6        modulating the phase of said optical pulses in said first and second  
7        streams as a function of first and second streams of input data,  
8        respectively, to encode said first and second streams of input

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9 data onto first and second streams of RZ optical pulses,  
10 respectively.

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1 13. (Original) The method defined in claim 12, wherein said first and  
2 second streams of optical pulses each have same first wavelength, and  
3 wherein said method further includes the step of combining, in a  
4 wavelength division multiplexer, the phase modulated optical pulses  
5 generated in said modulation step with at least a second modulated  
6 optical signal having a wavelength different from said first wavelength.

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1 14. (Original) The invention defined in claim 12 wherein the said optical  
2 pulses are solitons.

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1 15. (Previously Presented) An optical communication method for  
2 transmitting at least one stream of input data from a transmitter to a  
3 remote receiver, said method comprising steps of:  
4 generating a stream of RZ optical pulses in which alternate ones of  
5 such pulses have essentially orthogonal polarizations, and  
6 modulating the phase of said pulses as a function of said input  
7 data applied to said transmitter to encode said input data into  
8 said stream of RZ optical pulses, and  
9 transmitting the modulated optical pulses from said transmitter to  
10 said remote receiver via an optical communication channel.

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1 16. (Original) The invention defined in claim 15 wherein said method  
2 further includes demodulating said modulated pulses received at said  
3 remote receiver to recover (said) at least one stream of input data.